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ABSTRACT

The major objective of this study was to determine if the achievement of students in a two-hour block would be comparable to students in a three-hour block. Data on student attitudes, attendance, and dropout rates were also gathered to see if there were any positive correlations between resultant data in these areas and student achievement in the two-hour block. Students in the two-hour block at Newport High School were paired with students in the three-hour block at vocational schools in Northern Kentucky. These students were then administered tests of aptitude, achievement, and attitudes. An analysis of the resultant scores indicated that the two-hour block is comparable to the three-hour block in terms of achievement in two of the three areas tested (drafting and graphic arts). The two-hour block appears to have a favorable effect upon the dropout rate and absenteeism; however, the results are inconclusive. (Evaluation forms and results are appended.) (Author/LRA)

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FINAL REPORT

A STUDY OF A TWO HOUR TIME BLOCK IN INDUSTRIAL EDUCATION

by

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Project Director
and
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U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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ABSTRACT

Title Of Project: *A Study of a Two Hour Time Block in Industrial Education*

Project Duration: *September 1, 1976 - July 31, 1979*

The major objective was to determine if the achievement of students in a two-hour block would be comparable to students in a three-hour block. Student attitudes, attendance and dropout rates were, also, gathered to see if there were any positive correlations between resultant data in these areas and student achievement in the two-hour block.

Students in the two-hour block at Newport High School were paired with students in the three-hour block at vocational schools in Northern Kentucky. These students were then administered tests of aptitude, achievement, and attitudes. An analysis of the resultant scores appears under the results section.

The contributions of this project to vocational education are - the two-hour block is comparable to the three-hour block in terms of achievement gain in two of the three areas tested. (Drafting and Graphic Arts). The two-hour block, also, appears to have a favorable effect upon the dropout rate and absenteeism, however, due to many experimental variables not previously taken into account the results are inconclusive. Student attitude results failed to yield any useable data due to the experimental design.

PREFACE

The author would like to express appreciation to the educators who assisted in the efforts of this project: Dan Sullivan, Superintendent; Fred Kelly, Director of Education; Jack Corwin, Region VII Director of Vocational Education; Ernie Matthews, Coordinator, Vocational Education. Thanks to George Frakes, Jerry Abney, Steve Cunningham, Ron Radenheimer, Howard Tartar, Barbara Clark and Darrell Schultz, the Teachers and administrators of the schools in Northern Kentucky who participated in this project.

Special thanks to Dr. Ralph O'Brien, Dr. James McKenney, Dr. George Manning, Professors at Northern Kentucky University, for their supporting services.

Sincere appreciation to Miss Janet Graves without whose efforts this final report would have been impossible.

Instrumentation for collection of student achievement was made available by the Ohio Department of Education through Mr. Ray Rinderer, consultant for the Instructional Materials Laboratory at the Ohio State University.

Instrumentation for collection of student attitudes was made available by Dr. Robert E. Bills, Research Professor, University of Alabama.

INTRODUCTION

Industrial Education Programs, historically, have been scheduled in a three hour training block. This provides ample time for instruction, student set up and take down time for individual projects, and job preparation activities. This scheduling approach seems appropriate for a vocational school program.

In any case, Laurel County, Kentucky, just recently (1976) completed a study of the use of two hour training periods for vocational preparation programs. During this time the program was changed from a three hour to a two hour training block. At the end of the testing period the teachers and administrators preferred the three hour block over the two hour block.

Newport High School is a completely different situation: an urban as compared to rural setting; academic programs integrated with vocational programs; an emergence of practical arts programs in the seventh, eighth, and ninth grades; an inclusion of sophomores in a preparation program; and a change is made from a one hour block to a two hour block.

Alternative situations may suggest the need for alternative preparation programs and ways in which they are implemented.

Over the (1976-77, 1977-78, 1978-79) school years a test group (Newport High School - 2 hour block) and a control group (Northern Kentucky Vocational Schools - 3 hour block) were studied to determine if there would be comparable gain in cognitive knowledge of specific skill areas and related personal attitudes.

The following sections address themselves to these questions.

ACTIVITIES AND ACCOMPLISHMENTS

Problems under consideration

The intent of this project was to determine what effect the introduction of a two hour training block will have on the vocational education of industrial education students.

Four major areas were studied: achievement, attitudes, absenteeism, and the dropout rate. The respective objectives were the following:

1. The achievement of students in a two-hour block for three years will be comparable to students in a three-hour block for two years.

   A. Compare the achievement of the Newport students in the two-hour blocks with the achievement of the control groups in the three hour blocks, as evidenced by scores on the Ohio Trades Achievement Test. Pre-tests administered in September, (1976, 1977) and Post-tests in May, (1977, 1978 and 1979).

2. *Student attitudes toward themselves, toward school, and toward the world of work will improve as they progress through their vocational programs.*

   A. *Compare the pre-test and post-test scores of students enrolled in industrial education courses to determine attitudinal change as evidenced by scores on the Bill's Index of Adjustment and Values.*

   B. *Compare the attitudinal change of students in two-hour block with those in the three-hour block as evidenced by scores on the Bill's Index of Adjustment and Values.*

3. *There will be a decrease in those dropping out of school and in absenteeism.*

   A. *Compare the current dropout rate with the areas in 1975-1976 school year.*

   B. *Compare the attendance record of the vocational students before and after the adoption of the vocational program.*

Methods

The two-hour vocational block classes of Newport High School were matched with the three-hour vocational block classes at vocational schools in the Northern Kentucky area in the following way. Newport High School graphic arts was paired with Northern Kentucky Vocational School graphic arts, Newport High School's construction electricity and mechanical drafting groups were paired with Campbell County Vocational's mechanical drafting and construction electricity classes.

After the target groups and control groups were identified the administration of the test battery was initiated. The test used was The Ohio Trades Achievement Test, which consists of a one hour aptitude test (The California Short Form Test of Academic Aptitude) and a two part test on the appropriate trade. Each part of the trade test takes between one and two and a half hours to complete, depending upon the trade. The administration of this battery is over three consecutive days. The students were given the test battery in September,(1976, 1977, 1978), (pre-testing) and again in May, (1977, 1978, 1979), (post-testing). The tests were scored by the Instructional Materials Laboratory, Columbus, Ohio, (Ohio Trades Achievement Test).

All students were administered the Bill's Index of Adjustment and Values, which is an index on attitudes that takes approximately forty - five minutes to complete. These tests were scored by Dr. Robert E. Bills, University of Alabama. (See Appendix for a brief explanation of Bill's Index and a copy of the test.)

The collection of the data on absenteeism and the dropout rate was done at Newport High School. All test administration and collection of data was done by the testing coordinator in an effort to minimize the test variables.

STATISTICAL ANALYSIS

As previously stated in the report, the primary objective of the project was to compare the effectiveness of the two-hour time block in the Newport School System with the three-hour time block in the Campbell County Vocational School in three areas of achievement: Construction Electricity, Graphic Arts, and Mechanical Drafting.

Students at Newport and the Campbell County Vocational School beginning in each of these three areas were pretested in the fall and tested at the end of each academic year as they progressed through the respective programs. Table 1 indicates the number of students in e[illegible] time block and in each program who initially entered and were tested after completion of the entire sequence.

TABLE 1

Number of students who initially entered the program and were tested after completion of the program.

	Construction Electricity	Graphic Arts	Mechanical Drafting
Newport (2 Hour Block)	1 (16)	6 (18)	6 (14)
Vocational School (3 Hour Block)	21 (39)	7 (9)	15 (39)

The numbers in parentheses given in Table 1 represent the total number of students pretested as they entered the first year of the program in each of the areas. The numbers are generally larger for the vocational school since two groups of students could enter and complete the two year programs while only one group could progress through the three year program at Newport during the years 1976 - 1979.

Many factors contributed to the dropout rate in the programs at Newport, but one major factor was that junior or senior students took the beginning course in one of the academic areas and were graduated before the project was completed. Thus, the number of students initially pretested at Newport is spuriously high.

Before any overall analysis was attempted, the pretest scores for all students were examined to determined if the students were initially comparable upon entering the programs. Table 2 presents the results of the pretest scores for all three areas.

TABLE 2

		(2 Hour) Newport	(3 Hour) Vocational School	
Construction Electricity	n	33	41	
	$\bar{x}$	79.0	96.7	t: - 4.92
	S.D.	10.4	18.4	
	median	78.0	95.0	
Graphic Arts	n	29	7	
	$\bar{x}$	102.6	104.1	t: - .17
	S.D.	21.5	16.9	
	median	97.0	109.0	
Mechanical Drafting	n	27	33	
	$\bar{x}$	74.6	71.7	t: .831
	S.D.	13.6	13.2	
	median	71.0	71.0	

Independent t values computed for each of the groups indicated, at the .05 level, that the students were initially significantly better at the vocational school in Construction Electricity, but comparable in Graphic Arts and Mechanical Drafting. Since only one student in the two-hour block completed the entire sequence in Construction Electricity, no comparisons could be made for this vocational area. Because the pretest scores were not significantly different in Graphic Arts and Mechanical Drafting, the analysis of those who completed the program in these areas could be done on post test scores only.

Table 3 reports the basic post test information in each of the vocational areas after completion of the programs in the 2 hour and the 3 hour blocks.

TABLE 3

Post test results for those students who completed the program.

		Construction Electricity	Graphic Arts	Mechanical Drafting
Newport (2 Hour)	n	1	6	6
	$\bar{x}$	89	145	104.3
	S.D.	-	39.5	12.8
	median	89	153.5	103
Vocational School (3 Hour)	n	21	7	15
	$\bar{x}$	111.5	146.3	85.9
	S.D.	21.7	31.8	19.9
	median	115	155	83

Because of the small sample sizes and tendencies toward skewness the Mann-Whitney Test For Independent Groups was selected to test the following hypotheses:

Ho: Achievement in the two-hour block is at least as good as achievement in the three-hour block.

Ha: Achievement in the two-hour block is significantly less than the achievement in the three-hour block.

All testing was done at the .05 level of significance.

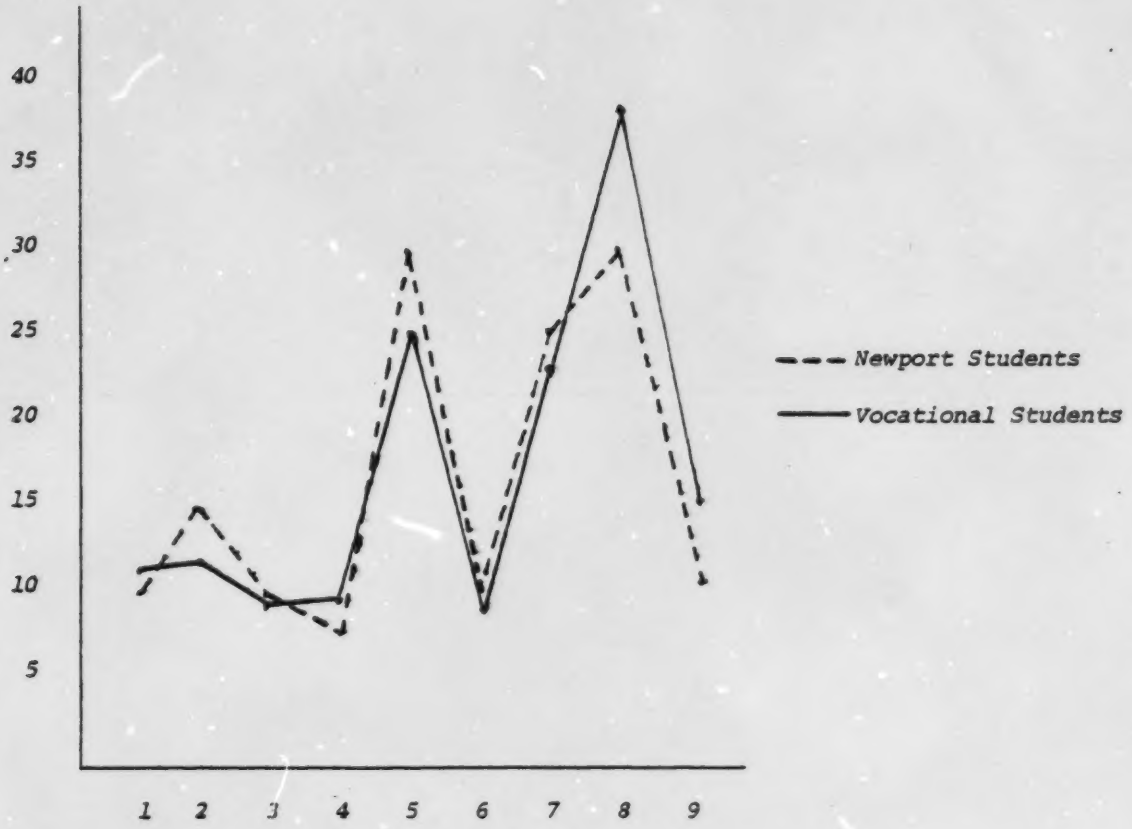
*For both Graphic Arts and Mechanical Drafting the analysis of the data in Table 3 lead to the acceptance of the null hypothesis that students at Newport in the 2 hour block achieved at least as well as students at the vocational school in the three-hour block.**

The Ohio Trades Achievement Test reported subtest scores along with the total composite score for each of the three areas tested. Table 4 shows a profile of subtest means in Graphic Arts for students in the 2-hour and the 3-hour blocks. Table 5 reports comparable information for Mecnanical Drafting.

* *See Appendix II for results of Mann-Whitney Test.*

TABLE 4

	Subtest Means[b]								
	1	2	3	4	5	6	7	8	9
Newport (2 Hour Block)	9	14	9	7.5	29.5	9.8	24.7	30.8	10.8
Vocational (3 Hour Block)	10.6	11	8.6	8.9	24.4	8.4	23	37.3	14.1

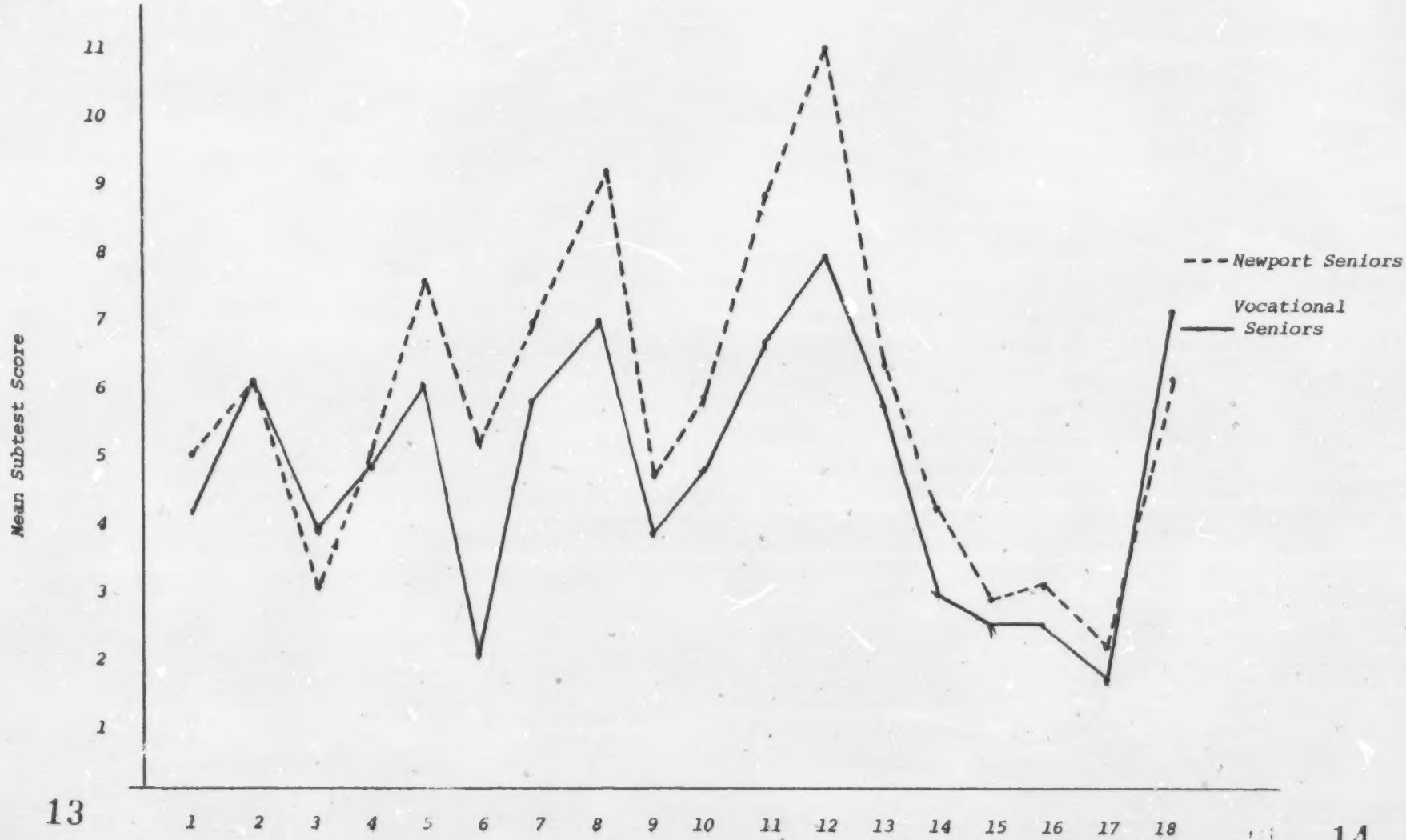


b: See Appendix III for Subtest Titles

TABLE 5 Mechanical Drafting

Subtest Means[b] b: See Appendix III for Subtest Titles

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Newport (2 Hour)	5	6.2	3.2	5	7.5	5.3	6.8	9.3	4.5	5.7	8.8	10.8	6.3	4.2	2.7	3	2.3	6
Vocational School (3 Hour)	4.2	6.2	3.9	4.5	5.7	2.1	5.7	7.0	3.8	4.8	6.5	7.8	5.7	2.9	2.4	2.4	1.7	7.1



As indicated in Table 4 the Newport students generally did better on Composing and Camera (Subtest 2) and Film Processing (Subtest 5) and poorer on Off-Set Presses (Subtest 8) and Finishing Operations (9). Table 5 presents a pattern of general overall superiority by the students in the two-hour block. On only two of the 18 subtests were the Newport students lower than the vocational students.

All of the analysis to this point was done on those students who completed the entire 2 or 3 year sequence in each of the trade areas. A secondary investigation was conducted to compare the students in each of the trade areas as they completed each year of the program in the 2-hour and 3-hour blocks. The previously stated hypotheses were again tested, still at the .05 level of significance, with the Mann-Whitney Test for Independent Groups. The major change was that groups were compared after being in the sequence one year, two years, and, when appropriate, three years. No pretesting was required for students to be included in the groups.

Tables 6, 7, and 8 present the results for Construction Electricity, Graphic Arts, and Mechanical Drafting, respectively.

TABLE 6

CONSTRUCTION ELECTRICITY

		First Year	Second Year	Third Year
Newport (2 Hour)	n	34	18	1
	$\bar{x}$	82.9	86.4	89
	S.D.	13.9	11.7	-
	Median	81.0	85.5	89
Vocational School (3 Hour)	n	50	25	
	$\bar{x}$	101.4	111.2	
	S.D.	19.7	21.6	
	Median	99.5	114.0	

TABLE 7

GRAPHIC ARTS

		First Year	Second Year	Third Year
Newport (2 Hour)	n	30	15	6
	$\bar{x}$	113.9	116.3	145.0
	S.D.	26.1	27.0	39.5
	Median	112.5	115.0	153.5
Vocational School (3 Hour)	n	18	9	
	$\bar{x}$	138.0	151.1	
	S.D.	31.6	36.8	
	Median	137.5	155.0	

TABLE 8

MECHANICAL DRAFTING

		First Year	Second Year	Third Year
Newport (2 Hour)	n	27	20	8
	$\bar{x}$	81.7	97.2	99.5
	S.D.	18.9	26.3	19.4
	Median	79.0	89.0	103
Vocational School (3 Hour)	n	33	15	
	$\bar{x}$	78.0	84.3	
	S.D.	14.2	22.1	
	Median	77.0	83.0	

The large number of students in each area, particularly for the first year, is the sum of all students who took the first year of that vocational area regardless of any further work. For example, the 27 students at Newport in Mechanical Drafting for the first year are the beginning students for 1976, 1977, and 1978.

Analyses of tables 6, 7, and 8 give completely different profiles of the progress of the groups in the different vocational areas.

In Construction Electricity, the Newport students were significantly lower at each testable stage. Even after two years in the program for the two-hour block, the students were significantly lower than the vocational students in the three-hour block after only one year.*

*In Graphic Arts, the students in the 2-hour block are significantly lower in achievement than the 3-hour block students at every stage until the completion of the program. However, after 3 years in the 2-hour block the students achieved at least as well as the students in the 3 hour block after 2 years.**

*In Mechanical Drafting, the students in the 2-hour block are at least as good as the students in the 3-hour block at every stage.**

* *Refer to Appendix II for results of Mann-Whitney Test.*

TABLE 9

Median Achievement in Construction Electricity

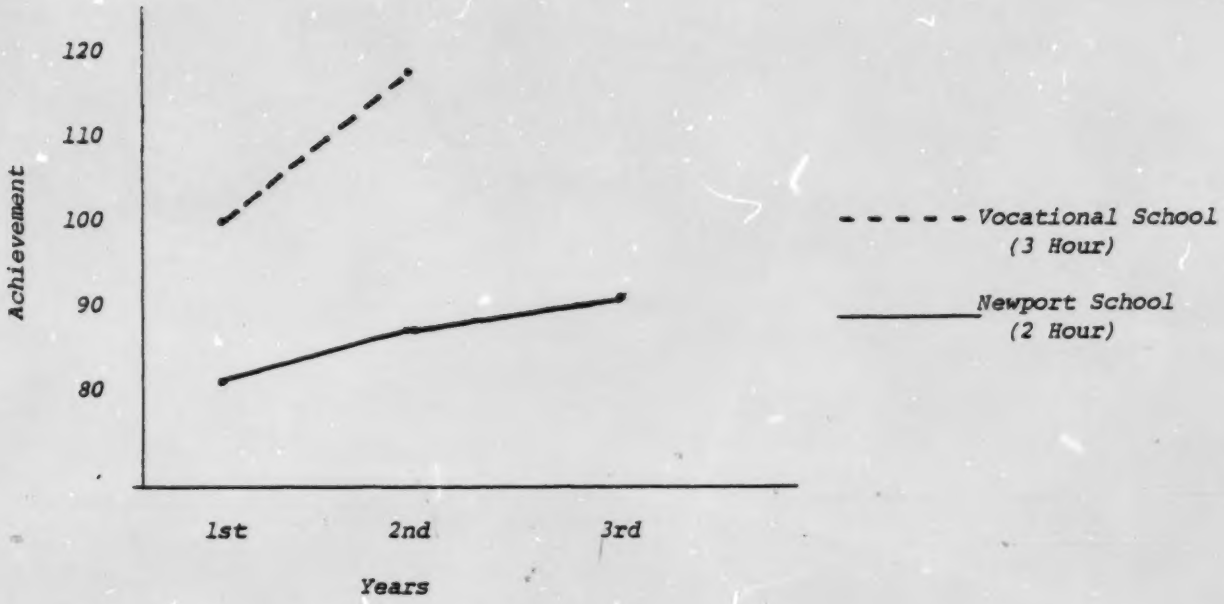


TABLE 10

Median Achievement in Graphic Arts

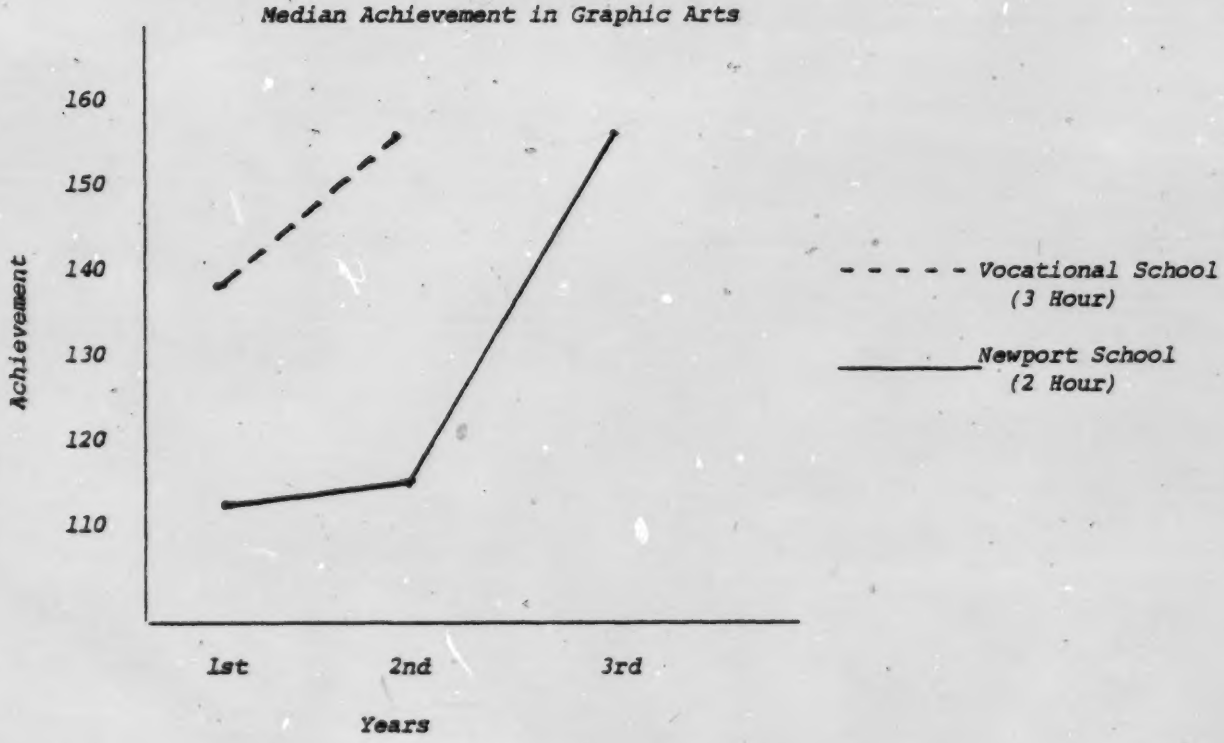
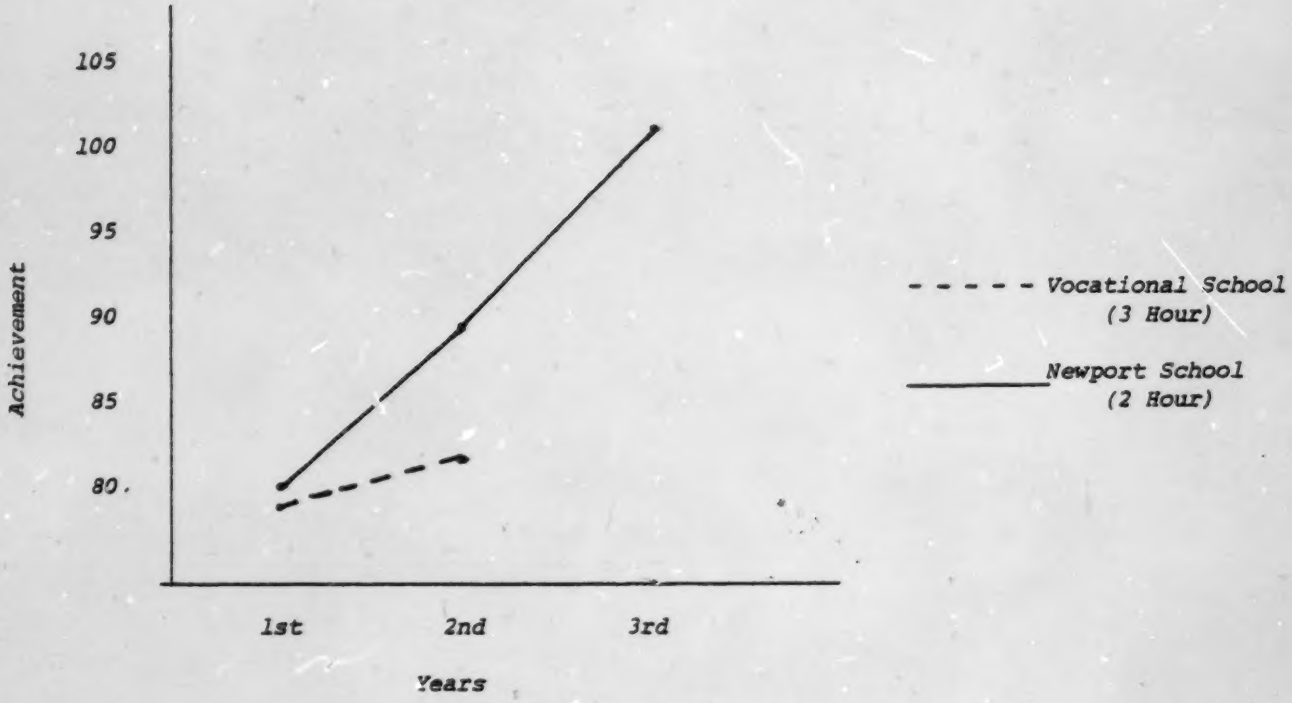


TABLE 11

Median Achievement in Mechanical Drafting



Tables 9, 10, and 11 demonstrate the relationships between the average achievement in each of the vocational areas across the years in the programs.

SUMMARY AND CONCLUSIONS

Based upon the data collected, the following conclusions seem appropriate:

(a) Students at Newport in the two-hour block achieve at least as well as the students in the three-hour block at the Vocational School in Graphic Arts and Mechanical Drafting.

(b) Because of the severe dropout rate no conclusion can be made concerning the Construction Electricity. The trend seems to indicate that the three-hour block is better, but the same trend appeared in the Graphic Arts area and was negated when students in the two-hour block completed the third year.

Many threats exist to the validity of the study. Some are:

(a) Characteristics of students dropping out and finishing may have an effect on achievement.

(b) Students in an inner-city school may possess different attitudes and interests concerning vocational education than students attending a formal vocational school.

(c) Equipment in the two schools differs considerably.

(d) Different approaches and philosophies in teaching vocational programs may exist in the two schools.

(e) Larger samples are needed to bring more stability to results of hypotheses testing.

ATTITUDE RESULTS

As was mentioned earlier in the report, one of the objectives of the project was to compare the attitudes of students in the two-hour block with the attitudes of those students enrolled in the three-hour block. It was originally hypothesized that the students attitudes towards themselves, school and the world of work would increase as they became more involved in their specific trade area.

Students at Newport High School, Campbell County Vocational School and Northern Kentucky Vocational School were administered the Bill's Index of Adjustment and Values at the beginning and end of each academic year with the exception of 1979 when due to factors previously mentioned they were administered just the post-test.

Table 12 indicates the percentage of students gained or lost in each category sign after the three years of the project. (See Appendix I for explanation of category signs.)

In both graphic arts and electricity, Newport High School has shown an increase in the percentage of students registering scores which place them in the two most desirable category signs ++, -+ (See Appendix I) after three years in their respective trade areas. This would seem to indicate that the students attitudes towards themselves, school and the world of work have undergone a favorable change. The attitude scores of Newport High's Drafting class have shown a decrease in the percentage of students attaining scores placing them in the two most desirable category signs ++, -+, while showing an increase in the percentage of students falling in the most undesirable cateogry signs +-, --. This would seem to indicate that the drafting students attitudes towards themselves, school and the world of work have not undergone a positive change.

The attitude scores of the control groups (Campbell County Vocational, Northern Kentucky Vocational) have shown a gain in the percentage of students falling in the most desirable category sign ++, in all three trade areas, electricity, graphic arts and drafting, indicating a favorable attitude change in all three trade areas.

Broad generalizations are possible, but no conclusive statements can be made concerning this data on student attitudes for the following reasons:

A. The initial methodology for gathering attitude information was faulty, specifically, there was no means of identifying those students who took part in the attitude testing portion of the test battery throughout the projects entire length, which made statistical analysis of individual students gain scores impossible.

B. Due to the loose experimental design of the project it is not logical to assume that the gain or loss on attitude scores are just a result of their involvement in the two-hour or three-hour block. Many extraneous factors may have had an effect on student attitudes, such as, the hugh disparity in total equipment inventory between some target and control groups. For example; the comparison of Newport High Schools Graphic Arts ($15,000 equipment inventory) with Northern Kentucky Vocational Schools Graphic Arts ($120,000 equipment inventory) and Campbell County Vocational's Electricity ($40,000 equipment inventory) with Newport High School Electricity ($12,000 equipment inventory). (Both Drafting classes appear to have comparable equipment inventories). This difference in school facilities could thus have had an influence on the students changing

B. attitudes as well as the curriculum contest taught. The difference in the socio-economic background of Newport High Students (lower-class poverty level) and Northern Kentucky and Campbell County Vocational Students (lower-class poverty level to upper middle class) may have, also, influenced the attitude scores.

C. The lack of discernable patterns on the students attitude scores (Tables 13 and 14) over the length of the project would lend support to the notion that many other factors besides involvement with the two-hour block affected student attitudes.

D. The lack of committment to the project by some administrators and teachers could have possibly influenced student attitudes.

ATTENDANCE AND DROP-OUT RATE RESULTS

It was originally hypothesized that students involved in the two-hour block would demonstrate an increase in attendance and a decrease in the drop-out rate.

At the conclusion of the project all three trade areas were experiencing both a higher percentage of attendance (Table 15) and a lower drop-out rate (Table 16) than they were before the introduction of the two-hour block. This would seem to suggest then that the two-hour block has a favorable effort upon both student attendance and the drop-out rate. However, these results appear inconclusive in light of the many variables previously discussed that may have effected student achievement and student attitudes. The attendance and drop-out rates may very well have been effected by teacher personalities, vocational guidance counselors, weather and home conditions, as well as by the two-hour time block. Questionable record keeping practices by some teachers, also, sheds questionable validity on the attendance and drop-out rate data.

CONCLUSIONS

After three years of studying the two-hour block and its effect on student achievement, attitudes, attendance and drop-out rates the following conclusions seem appropriate:

A. Students at Newport in the two-hour block achieve at least as well as the students in the three-hour block at the vocational schools in Graphic Arts and Mechanical Drafting.

B. Because of the severe drop-out rate no conclusions can be made concerning construction electricity.

C. The two-hour block appears to have a positive effect upon student attitudes in graphic arts and construction electricity. However, due to inappropriate experimental design the attitude data is inconclusive.

GAIN OR LOSS IN ATTITUDE SCORES ON
THE BILLS INDEX OF ADJUSTMENT AND VALUES
(Pretest 1976-77, vs Posttest 78-79)

TABLE 12

School	++	-+	+-	--
	ELECTRICITY			
	Percentage of gain or loss of students in each category sign			
Newport High School	+9.2	+1.1	-7.1	-3.3
Campbell County Vocational	+34.3	-8.3	-8.3	-17.6
	DRAFTING			
Newport High School	-8.2	-12.4	+6.2	+14.7
Campbell County Vocational	+22.0	-17.8	+4.8	-8.9
	GRAPHIC ARTS			
Newport High School	+8.8	+9.4	-5.0	-13.1
Northern Ky. Vocational	+10.0	+3.3	+16.4	-30.0

ATTITUDE SCORES OF THE "TARGET GROUP" (NEWPORT HIGH) ON THE BILLS INDEX OF ADJUSTMENT AND VALUES

TABLE 13

School	Trade	Test-Yr.	No.	Percentage of Students in each Category Sign			
				++	-+	+-	--
Newport H.S.	Electricity	pre-76-77	40	12.5	25.0	37.5	25.0
Newport H.S.	Electricity	post-76-77	30	6.2	15.6	53.1	25.0
Newport H.S.	Electricity	pre-77-78	14	7.1	14.3	50.0	28.6
Newport H.S.	Electricity	post-77-78	17	29.4	29.4	29.4	11.8
Newport H.S.	Electricity	post 79	23	21.7	26.1	30.4	21.7
Newport H.S.	Drafting	pre-76-77	23	17.3	26.0	34.7	21.7
Newport H.S.	Drafting	post-76-77	17	5.8	17.6	35.2	41.1
Newport H.S.	Drafting	pre-77-78	17	17.6	23.5	47.1	11.8
Newport H.S.	Drafting	post-77-78	22	13.6	40.9	22.7	22.7
Newport H.S.	Drafting	post 79	22	9.1	13.6	40.9	36.4
Newport H.S.	Graphic Arts	pre-76-77	32	6.2	15.6	50.0	28.1
Newport H.S.	Graphic Arts	post-76-77	27	14.8	11.1	40.7	33.3
Newport H.S.	Graphic Arts	pre-77-78	15	26.7	13.3	33.3	26.7
Newport H.S.	Graphic Arts	post 77-78	24	16.7	20.8	37.5	25.0
Newport H.S.	Graphic Arts	post 79	20	15.0	25.0	45.0	15.0
NATIONAL NORMS FOR CATEGORIES [3]				++ 14.3	-+ 21.9	+- 40.1	-- 23.7

ATTITUDE SCORES OF THE "CONTROL GROUP" STUDENTS ON THE BILLS INDEX OF ADJUSTMENT AND VALUES

TABLE 14

School	Trade	Test-Yr.	No. Students	Percentage of Students in each Category Sign ++	+	+-	--
Campbell Co. Vocational	Electricity	pre-76-77	36	13.8	30.5	30.5	25.0
Campbell Co. Vocational	Electricity	post-76-77	40	11.7	14.7	50.0	23.5
Campbell Co. Vocational	Electricity	pre-77-78	15	26.7	13.3	53.3	6.7
Campbell Co. Vocational	Electricity	post-77-78	31	54.8	12.9	19.4	12.9
Campbell Co. Vocational	Electricity	post 79	27	48.1	22.2	22.2	7.4
Campbell Co. Vocational	Drafting	pre-76-77	27	7.4	29.6	48.1	14.8
Campbell Co. Vocational	Drafting	post-76-77	19	26.3	26.3	26.3	21.0
Campbell Co. Vocational	Drafting	pre-77-78	14	28.6	21.4	35.7	14.3
Campbell Co. Vocational	Drafting	post-77-78	25	48.0	12.0	40.0	0
Campbell Co. Vocational	Drafting	post 79	17	29.4	11.8	52.9	5.9
Northern Ky. Vocational	Graphic Arts	pre-76-77	6	16.7	16.7	16.7	50.0
Northern Ky. Vocational	Graphic Arts	post-76-77	3	0	0	66.7	33.3
Northern Ky. Vocational	Graphic Arts	pre-77-78	15	46.7	20.0	13.3	20.0
Northern Ky. Vocational	Graphic Arts	post-77-78	10	20.0	10.0	70.0	0
Northern Ky. Vocational	Graphic Arts	post 79	15	26.7	20.0	33.3	20.0
NATIONAL NORMS FOR CATEGORIES[4]				++ 14.3	+ 21.9	+- 40.1	-- 23.7

PERCENTAGE OF ATTENDANCE FOR TARGET GROUP (NEWPORT HIGH), BEFORE (1975-76) AND AFTER (1976-77, 1977-78, 1978-79) ADOPTION OF THE 2 HR BLOCK

TABLE 15

PERCENTAGE OF ATTENDANCE

VOCATIONAL TRADE	YEAR 1975-76	YEAR I 1976-77	YEAR II 1977-78	YEAR III 1978-79
ELECTRICITY	91.2%	95.5%	95.2%	93.3%
DRAFTING	92.0%	95.3%	93.8%	94.6%
GRAPHIC ARTS	*	96.6%	97.6%	97.2%

* GRAPHIC ARTS attendance data was unavailable for the 1975-76 school year.

PERCENTAGE OF DROP-OUTS OF TARGET GROUP (NEWPORT HIGH) BEFORE (1975-76) AND AFTER (1976-77, 1977-78, 1978-79) ADOPTION OF THE 2 HOUR BLOCK

TABLE 16

PERCENTAGE OF DROP-OUTS

VOCATIONAL TRADE	YEAR 1975-76	YEAR I 1976-77	YEAR II 1977-78	YEAR III 1978-79
ELECTRICITY	13.1	9.1	7.8	12.75
DRAFTING	36.1	21.2	19.1	8.0
GRAPHIC ARTS	*	3.1	0.0	5.6

* GRAPHIC ARTS drop-out data was unavailable for the 1975-76 school year.

D. The two-hour block appears to have a favorable effect on student attendance and the student drop-out rate. However, the many variables effecting these areas make the results inconclusive at this time.

RECOMMENDATIONS

The recommendations made concerning the use of the two-hour block in vocational education are as follows:

A. Further study of the two-hour block is needed to determine and further validate its effect on student achievement and attitudes.

B. Test sites for further study of the two-hour block should have adequate equipment inventories.

C. An air-tight experimental design is needed to reduce the experimental variables (which plaqued this project) effecting the results.

D. Total committment of all personnel and administration involved in the effort is paramount.

E. Comparable "control groups" should be identified so as to negate spurious results. Possibly students from the same school being taught by the same teacher in a three-hour block, also, students should be matched for their socio-economic backgrounds.

F. A student questionaire should be administered in order to obtain valuable data concerning the students feelings about the two-hour block.

G. All teachers involved in the project should be briefed to insure that the same curriculum content is taught.

H. All student drop-outs from the two-hour block should be interviewed to obtain their reasons for leaving the program.

I. Adequate, stable sample populations for study should be identified.

J. A more incisive test of student attitudes needs to be uncovered in order to more effectively measure student attitude gains.

DISSEMINATION ACTIVITIES

Dissemination activities were not funded within the scope of this project. Mass or thin market dissemination of a state-wide nature were not undertaken.

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APPENDIX I

THE INDEX OF ADJUSTMENT AND VALUES

The I.A.U. was developed by Dr. Robert E. Bills of the University of Alabama in the early 1950's. The stimulus for the Development of this research instrument was: (1) to study and assess the self concept, and (2) the need for schools to have available a system with which they could assess the affective consequences of their work.

Variables in the effective realm are difficult to observe and to measure. If they were continuously evident to teachers, even to the extent that change in cognition is evident, teachers would attend more closely to them, and as a result of their teaching, would work harder to create learning climates more conductive to positive affective change. Since these measures are so difficult to assess, teahcers only infrequently have any notion of the effects of schools on the affective lives of students. This system provides teachers with the information they need to improve the affective climates for learning and the affective learnings of students. Each part of the system measures a variable or variables of central importance to the perceptual theory of educational development.

This system has five parts: (1) Information about self-concept, (2) acceptance of self, (3) concept of the ideal self, (4) discrepancy between self and ideal self, (5) comparable measures of perceptions of other people.

The information derived from the scores helps a school to know the level of feeling of the students. The information is given at a level which enables the school to assess what improvements and changes are needed, not just that change is needed. Finally, since the system is fully computerized, it provides schools with a rapid turn-around of information which can be in any form the schools desire, for example, by sex, grade level, or any other desired factor.

AN EXPLANATION OF THE INDEX OF ADJUSTMENT AND VALUES (I.A.V.) CATEGORY SIGNS

Often the Index of Adjustment and Values is used in test-retest situations to assess change due to the manipulation of an experimental variable. The I.A.V. yields several scores but a primary concern is the research has been with the scores which represent a person's self acceptance (How he feels about his own worth) and his beliefs about the self acceptance of other people in his peer group. Basically, the scores separate people into four categories: ++, -+, +-, and --. In each instance the first of the two signs relates to the self score and the second sign relates to the others scores. These scores may be used to represent four groups of people.

The first of these groups, ++ people, have acceptance of self scores greater than the average of the population on which the I.A.V. was standardized and "others" scores equal to or greater than "self" scores. The second group, -+, has self acceptance scores below the population average and "others" scores equal to or greater than the "self" scores. The third group, +-, has self scores above the population average, but "others" scores less than "self" scores. The last group, --, has acceptance of self scores below the population average and "others" scores less than "self" scores.

Each of these four groups has distinguishing characteristics. The research studies have been concerned primarily with ++, -+ and +- groups, since the subjects used for the studies were drawn from groups which only infrequently included a significant number of -- people. There is increasing evidence, however, that the number of -- people in the general population is mounting significantly and rapidly.

To Summarize:

The ++ person is basically secure. He holds positive attitudes toward himself and others. Essentially he is cooperative, assumes responsibility and excercises imagination and creativity. He is tuned to his own needs yet at the same time he is sensitive to the rights and feelings of others. He does not yield to arbitrary authority but will cooperate with duly constituted authority. At the same time he may work to modify the views of the authority but will do so directly rather than by devious means. Once he accepts responsibility for a task he may be expected to carry it to a satisfactory conclusion. This person feels little need to defend himself; thus, he seldom lies or steals. He has few aggressive impulses and thus is seldom guilty of stealing or vandalism. If he ever gives an impression of rudeness or insubordination, it is fairly certain that he has been "pushed" rather forcibly. Since he uses his capacities efficiently, he would less often be over age in school or severely retarded.

The -+ person yields readily to arbitrary authority but he does so with inner resentment that may be expressed in lying, cheating, stealing and occasionally in vandalism. Vandalism is especially likely to occur when he is in a group where he desires acceptance and where only peer authority exists. Since he basically distrusts himself he leans heavily on authority. When that authority is absent, he has no guideposts. He is not a delinquent. His delinquent acts are infrequent and once punished are seldom repeated. At school he readily accedes to authority and becomes submissive. He is infrequently absent or tardy unless authority at home has failed to insist that he be present and on time. This, however, is not the usual case. Since he is -+ because of the arbitrary authority which has been exercised at home. He lies and steals occasionally but this is an effort to protect himself. He gives the impression of being a responsible person and this he is, when the demands are made by other people. He is not responsible when he makes his own decisions or when he is required to initiate tasks on his own. He experiences considerable unhappiness. Far too often, unfortunately, he is viewed at home and at school as a "good" child and is rewarded by teachers and other adults.

The +- person is basically a -+ person who is defending himself against other people. It is likely that he basically mistrusts himself. But, this view of himself is too painful so he defends himself against it. He deals with the external world and with other people, seldom involving himself and continuously directing attention away from himself. He has respect for constituted authority but avoids accepting responsibility where possible. He would like to be the authority and as such is quite arbitrary. Although he lies, cheats, and sometimes steals, he is seldom caught since he defends himself so well. His attitude toward authority and more especially his own authority often leads to tardiness, absenteeism, rudeness and insubordination. He is likely to do much talking in class and to be a non-participator. Since he uses his abilities inefficiently, he is likely to be over age and retarded in his studies. His high degree of perceptual inaccuracy combined with his lack of respect for authority operate to produce his retardation.

Less is known about the -- person than about the other groups. This type of person questions the worth of people, including himself. He has a high level of negativism. He is uncooperative, unimaginative, and irresponsible. His stealing and cheating may be motivated by a desire to hurt other people. For the same reasons he may be rude and insubordinate. It is expected that he will not assume responsibility for his work, that he is a non-participator, is often retarded, has reading difficulties, and is habitually absent or tardy. Where as the -+ person may commit occasional acts of vandalism and may profit from being apprehended, the -- person may commit a series of acts and does not profit from punishment. As would be expected the -- person shows little interest in school work.

Of all people whose ideal descriptions are below their self descriptions on the I.A.V., the most frequently occuring are -- people. These people do not idealize the traits included on the I.A.V. These traits are near and dear to the hearts of teachers and other school personnel. Thus, the -- person has a "built-in" conflict with school personnel and eventually disappears or (Drops-out) from the schools. The most likely drop out is the -- person.[5]

"OTHERS" INSTRUCTIONS FOR HSIAV

We would like to get a better picture of what you think other people are like. To do this we would like you first to think of other people who are, in general, like you, for example, other high school freshmen, sophomores, juniors, or seniors, and second, to complete the HSIAV as you think the average person in this group would complete it for himself. Please turn your answer sheet so that the "OTHERS" side is face up. Now take each word and use it to complete the following sentence for the average person in your group.

HE IS A (AN) _____ PERSON.

Then decide how much of the time this statement is like this average person, i.e., is typical or characteristic of him in general, and rate him as he would rate himself on the following scale:

1. Seldom is this like he sees himself.
2. Occasionally, this is the way he sees himself.
3. About half of the time, this is the way he sees himself.
4. A good deal of the time, this is the way he sees himself.
5. Most of the time, this is the way he sees himself.

Select the number beside the phrase that tells how much of the time he sees himself this way and record it under Roman numeral I on the "others" side of your answer sheet in the same manner you used to record your responses to the "Self" side. Please continue to use the IBM card to help you keep your place.

Now go to Column II on the "Others" side. Use one of the statements given below to tell how he usually feels about himself as described in Column I and record your response under Roman numeral II on the "Others" side of the machine scoring sheet.

1. He very much dislikes being as he is in this respect.
2. He dislikes being as he is in this respect.
3. He neither dislikes being as he is nor likes being as he is in this respect.
4. He likes being as he is in this respect.
5. He very much likes being as he is in this respect.

Finally, go to Column III on the "Others" side. Using the same term, complete the following sentence:

HE WOULD LIKE TO BE A (AN) _____ PERSON.

Then decide how much of the time this average person in your group would like this trait to be characteristic of him and rate him on the following five point scale:

1. Seldom, would he like this to be him.
2. Occasionally, he would like this to be him.
3. About half of the time, he would like this to be him.
4. A good deal of the time, he would like this to be him.
5. Most of the time, he would like this to be him.

Record your response under Roman numeral III on the "Others" side.

SELF INSTRUCTIONS FOR HSIAV

There is need for each of us to know more about ourselves, but seldom do we have an opportunity to look at ourselves as we are or as we would like to be. On the IBM answer sheet is a list of words that can be used to describe people. Please turn this form so that the self side is face up. Now take each word and apply it to yourself by completing the following sentence:

I AM A (AN)_____PERSON.

As an example the word might be JOLLY, so you would substitute this term in the above sentence. It would read--I am a jolly person. Then decide HOW MUCH OF THE TIME this statement is like you, and rate yourself according to the following key:

1. Seldom is this like me.
2. Occasionally, this is like me.
3. About half of the time, this is like me.
4. A good deal of the time, this is like me.
5. Most of the time, this is like me.

Select the number beside the phrase that tells how much of the time the statement is like you and blacken the answer position corresponding to this number in the block of response positions under the Roman numeral I on the answer sheet. Please use a soft pencil with black lead (no ballpoint pens, please) and make your mark heavy and black. Make it as long as the brackets and completely cover the number of the response position. Please do not make any stray marks. If you make a stray mark or if you wish to change your response, please erase completely. Please be sure to use the IBM card you have been given to make it easier to stay on the correct line.

Now, go to Column II. Use one of the statements given below to tell HOW YOU FEEL about yourself as described in Column I.

1. I very much dislike being as I am in this respect.
2. I dislike being as I am in this respect.
3. I neither dislike being as I am nor like being as I am in this respect.
4. I like being as I am in this respect.
5. I like very much being as I am in this respect.

Select the answer which best suits how you feel about being the kind of person you described yourself as being in Column I and blacken in the correct number of the response under Roman numeral II on the answer sheet.

Finally, go to Column III and using the same term, complete the following sentence:

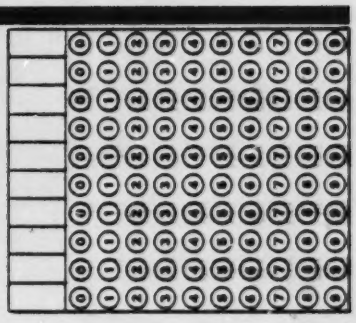
I WOULD LIKE TO BE A (AN)_____PERSON.

Then decide how much of the time you would like this trait to be characteristic of you and rate yourself on the same rating scale you used above for Column I to show how much of the time you would like to be this kind of person. Make your response under Roman numeral III on the machine scoring blank.

HIGH SCHOOL IAV
SELF FORM

DIRECTIONS: To make your responses, blacken the appropriate circle. Make your mark fill in the entire circle.

BE SURE TO MAKE YOUR MARKS HEAVY AND BLACK
ERASE COMPLETELY ANY ANSWERS YOU WISH TO CHANGE



NAME _____ DATE _____ SEX _____ CLASS _____
(LAST FIRST MIDDLE)

SCHOOL _____ CITY _____ AGE _____

	I	II	III	
active	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	active
alert	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	alert
carefree	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	carefree
cheerful	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	cheerful
considerate	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	considerate
cooperative	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	cooperative
courteous	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	courteous
dependable	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	dependable
democratic	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	democratic
faithful	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	faithful
friendly	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	friendly
generous	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	generous
happy	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	happy
helpful	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	helpful
honest	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	honest
humorous	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	humorous
intelligent	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	intelligent
interesting	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	interesting
kind	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	kind
loyal	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	loyal
neat	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	neat
obedient	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	obedient
patient	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	patient
playful	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	playful
polite	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	polite
quiet	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	quiet
sharing	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	sharing
sincere	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	sincere
studious	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	studious
sociable	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	sociable
tactful	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	tactful
thoughtful	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	thoughtful
thrifty	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	thrifty
trustworthy	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	trustworthy
truthful	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	truthful
understanding	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	understanding
unselfish	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	unselfish

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HIGH SCHOOL IAV
OTHERS FORM

DIRECTIONS: To make your responses, blacken the appropriate circle. Make your mark fill in the entire circle.

BE SURE TO MAKE YOUR MARKS HEAVY AND BLACK
ERASE COMPLETELY ANY ANSWERS YOU WISH TO CHANGE

	I	II	III	
active	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	active
alert	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	alert
carefree	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	carefree
cheerful	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	cheerful
considerate	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	considerate
cooperative	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	cooperative
courteous	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	courteous
dependable	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	dependable
democratic	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	democratic
faithful	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	faithful
friendly	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	friendly
generous	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	generous
happy	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	happy
helpful	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	helpful
honest	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	honest
humorous	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	humorous
intelligent	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	intelligent
interesting	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	interesting
kind	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	kind
loyal	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	loyal
neat	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	neat
obedient	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	obedient
patient	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	patient
playful	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	playful
polite	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	polite
quiet	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	quiet
sharing	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	sharing
sincere	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	sincere
studious	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	studious
sociable	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	sociable
tactful	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	tactful
thoughtful	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	thoughtful
thrifty	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	thrifty
trustworthy	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	trustworthy
truthful	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	truthful
understanding	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	understanding
unselfish	① ② ③ ④ ⑤	① ② ③ ④ ⑤	① ② ③ ④ ⑤	unselfish

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Construction Electricity

Newport: 2-Hour Block

PRETEST	FIRST YEAR	SECOND YEAR	THIRD YEAR
90	86	89	89
94	108	120	
97	95	96	
71	68	92	
88	106	92	
90	86	89	
78	74	77	
100	110	76	
68	77	75	
69	104	74	
77	76		
76	97		
90	108	86	
85	93		
89	86		
70	82	72	
79	80		
79	80		
87	72		
73	69		
90			
85			
81			
78			
76			

Construction Electricity

Newport: 2-Hour Block

(continued)

PRETEST	FIRST YEAR	SECOND YEAR	THIRD YEAR
74			
74			
72			
71			
71			
66			
65			
54			
	98		
	90		
	86		
	84		
	83		
	77		
	76		
	72		
	70		
	68		
	67		
	67		
	62		
	62		
		97	
		95	

Construction Electricity

Newport: 2-Hour Block

(continued)

PRETEST	FIRST YEAR	SECOND YEAR	THIRD YEAR
		85	
		83	
		80	
		77	

Construction Electricity

Vocational School: 3-Hour Block

PRETEST	FIRST YEAR	SECOND YEAR	THIRD YEAR
96	100	147	
120	68	127	
115	127	127	
100	108	124	
85	101	120	
94	101	120	
113	92	115	
95	73	108	
98	112	106	
101		106	
93	92	102	
94	80	97	
85	100	94	
79	76	75	
81	67	74	
	102	135	
	95	114	

Construction Electricity

Vocational School: 3-Hour Block

(continued)

PRETEST	FIRST YEAR	SECOND YEAR	THIRD YEAR
		112	
115	137	147	
78	130	140	
122	124	125	
63	107	120	
99		91	
78	80	77	
		76	
120	134		
104	130		
120	127		
86	108		
69	98		
88	96		
	80		
84	78		
93	69		
	141		
	130		
	125		
	125		
	120		
	114		
	112		

Construction Electricity

Vocational School: 3-Hour Block

(continued)

PRETEST	FIRST YEAR	SECOND YEAR	THIRD YEAR
	111		
	107		
	99		
	96		
	95		
	95		
	94		
	94		
	89		
	88		
	87		
	85		
	73		
150			
115			
115			
114			
112			
107			
100			
86			
83			
78			
69			
67			

Graphic Arts

Newport: 2-Hour Block

PRETEST	FIRST YEAR	SECOND YEAR	THIRD YEAR
145	174	165	179
150	161	160	181
129	126	155	178
83	91	66	91
-[a]		88	129
-[a]		102	112
124	101	122	
124	116	119	
126	122	116	
139	152	114	
		95	
112	121		
95	104		
76	103	115	
91	103	111	
87	97		
101	93		
107	91		
80	87	98	
80	79		
73	77		
75	75		
		118	
92		151	
	154		
	153		

Graphic Arts

Newport: 2-Hour Block

(continued)

PRETEST	FIRST YEAR	SECOND YEAR	THIRD YEAR
	148		
	119		
	119		
	119		
	118		
	115		
	110		
	97		
	92		
110			
110			
109			
99			
97			
96			
96			
94			
76			

Graphic Arts

Vocational School: 3-Hour Block

PRETEST	FIRST YEAR	SECOND YEAR	THIRD YEAR
		175	
		173	
		155	
		125	
		85	
88	147	149	
128	169	162	
111	170		
119	118		
109	105		
	92		
89	163		
85	77		
		213	
		123	
	192		
	173		
	158		
	157		
	155		
	128		
	127		
	126		
	124		
	103		

Mechanical Drafting

Newport: 2-Hour Block

PRETEST	FIRST YEAR	SECOND YEAR	THIRD YEAR
103	126	142	
80	120	112	121
83	88	117	117
70	87	84	105
67	97	105	101
65	82	89	94
55	79	80	88
			110
			60
70	96	116	
77		104	
57	67	76	
64	84	75	
67	66	71	
70	72	68	
		57	
106	118	149	
79	99	86	
81	82	106	
77	79	76	
57	81		
72	67		
67	65		
	49		

Mechanical Drafting

Newport: 2-Hour Block

PRETEST	FIRST YEAR	SECOND YEAR	THIRD YEAR
		89	
		142	
	98		
	74		
	70		
	68		
	67		
	62		
	62		
103			
92			
80			
72			
71			
67			
61			

Mechanical Drafting

Vocational School: 3-Hour Block

PRETEST	FIRST YEAR	SECOND YEAR	THIRD YEAR
80	60	121	
87	79	107	
78	88	101	
70		83	
73		83	
70	49	77	
74	61	71	
66	75	71	
79		60	
94	102	110	
89	107	109	
69		93	
65	62	77	
51		72	
62	60	54	
95	102		
		47	
	91		
	88		
73	86		
61	83		
	77		
	73		
64	70		

Mechanical Drafting

Vocational School: 3-Hour Block

(continued)

PRETEST	FIRST YEAR	SECOND YEAR	THIRD YEAR
76	69		
43	64		
	63		
	100		
	90		
	88		
	87		
	87		
	84		
	79		
	76		
	70		
	70		
	69		
	64		
105			
80			
76			
76			
73			
71			
68			
65			
64			

Mechanical Drafting

Vocational School: 3-Hour Block

(continued)

PRETEST	FIRST YEAR	SECOND YEAR	THIRD YEAR
62			
60			
46			

APPENDIX II

Since the Mann-Whitney procedure uses ranks of scores for analysis, W represents the sum of the ranks of scores, group 1 represents the students in the two-hour block at Newport, and group 2 represents the students in the three-hour block at the vocational school.

To test the null versus the alternate hypothesis as listed on page for those students who completed the program in Graphic Arts and Mechanical Drafting, the following values were computed:

				Value necessary to reset Ho at .05 level
Graphic Arts:	$n_1 = 6$ $n_2 = 7$	$w_1 = 46$ $w_2 = 45$	$u_1 = 25$	u_1 8
Mechanical Drafting:	$n_1 = 6$ $n_2 = 15$	$w_1 = 90$ $w_2 = 141$	$u_1 = 69$	u_1 23

To test the null versus the alternate hypothesis as listed on page for those students who completed one, two, and when appropriate, three years in each of the vocational areas, the following values were computed:

Construction Electricity				Approximate normal value
1 year Newport 1 year Vocational	$n_1 = 34$ $n_2 = 50$	$w_1 = 985.5$ $w_2 = 2584.5$	$u_1 = 390.5$	$z = -4.19$ reset Ho at .05 level
2 year Newport 1 year Vocational	$n_1 = 18$ $n_2 = 50$	$w_1 = 401.5$ $w_2 = 1944.5$	$u_1 = 230.5$	$z = -3.05$ reset Ho at .05 level
2 year Newport 2 year Vocational	$n_1 = 18$ $n_2 = 25$	$w_1 = 250.5$ $w_2 = 695.5$	$u_1 = 67$	$z = -3.89$ reset Ho at .05 level

Graphic Arts				Approximate Normal Value
1 year Newport	$n_1 = 30$	$w_1 = 571$	$u_1 = 106$	$z = -3.49$ reset Ho at .05 level
1 year Vocational	$n_2 = 18$	$w_2 = 605$		
2 year Newport	$n_1 = 15$	$w_1 = 195$	$u_1 = 75$	Reset Ho: U 88 reset Ho at .05 level
1 year Vocational	$n_2 = 18$	$w_1 = 366$		
2 year Newport	$n_1 = 6$	$w_1 = 50$	$u_1 = 29$	Reset Ho: U 12 reset Ho at .05 level
2 year Vocational	$n_2 = 9$	$w_2 = 70$		
Mechanical Drafting				
1 year Newport	$n_1 = 27$	$w_1 = 851$	$u_1 = 473$	$z = .04$ Accept Ho
1 year Vocational	$n_2 = 33$	$w_2 = 979$		
2 year Newport	$n_1 = 20$	$w_1 = 686.5$	$u_1 = 476.5$	$z = 2.69$ Accept Ho
1 year Vocational	$n_2 = 33$	$w_2 = 744.5$		
2 year Newport	$n_1 = 8$	$w_1 = 121$	$u_1 = 85$	To reset Ho at .05 level U 33 Accept Ho
2 year Vocational	$n_2 = 15$	$w_2 = 155$		

APPENDIX III

Subtest Titles

Graphic Arts

Subtests:

(1) Layout and Design

(2) Composing

(3) Paste up

(4) Proofing

(5) Camera and film processing

(6) Stripping

(7) Platemaking and Proofs

(8) Off-set Presses

(9) Finishing Operations

Mechanical Drafting

Subtests:

(1) Drafting Material and Equipment

(2) Dimensioning

(3) Auxiliary views

(4) Fastening methods

(5) Production/Working Drawings

(6) Elementary Machines

(7) Auxiliary Information

(8) Industrial Practices

(9) Industrial Materials

(10) Applied Science

(11) Orthographic Projections

(12) Sectional views

(13) Pictoral Drawings

(14) Intersections and Developments

Mechanical Drafting (continued)

Subtests:

(15) Geometric Drawings

(16) Lettering

(17) Reproduction of Drawings

(18) Mathematics